

Appendix 4.1

Summary of Federal Land Manager Comments and Responses

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Comments and Responses from First Comment Period (11/1/2007 – 8/20/2008)

The State of Kansas provided a draft of the Kansas Regional Haze State Implementation Plan (KS RHSIP) to federal land managers representing the US Park Service, US Fish and Wildlife Service, and the US Forest Service on November 1, 2007. In addition, draft copies were sent to the Environmental Protection Agency (EPA) Region 7 and to the Iowa Tribe, the Kickapoo Tribe, the Prairie Band Potawatomi Nation, and the Sac and Fox Nation for their comments. Comments were received from the federal land managers and EPA Region 7. No comments were received from the tribes.

United States Department of the Interior, Fish and Wildlife Service

Comments were received from the Fish and Wildlife Service of the US Department of the Interior (DOI) on December 26, 2007. Comments are in italics and the Kansas Department of Health and Environment's responses follow each comment. The letter from the DOI can be found in Appendix 4.2.

Comment 1:

Our general observations are as follows:

- 1. The BART determinations are generally well done, though they often lacked detailed cost information.*
- 2. The Regional Haze Agreements focus on emission limits that reflect the "presumptive" BART limits outlined in the Guidelines for Best Available Retrofit Technology Determinations, rather than the definitive technology chosen by the companies in their BART determinations that yield better than presumptive levels.*

There are two issues relating to the second bullet above. First, KDHE states on page 45 of the Regional Haze State Implementation Plan (SIP) that, "In establishing BART, Kansas determined that technological and/or economic considerations may change sufficiently by the time controls are built and the imposition of an emission standard based on a specific technology is infeasible." Given that a source that is subject to BART has only five years after the EPA approves the Regional Haze SIP to have BART controls operational, it portends that specific controls be defined in the Regional Haze SIP and not at a later date. If there are extenuating circumstances such as having to concurrently comply with another SIP requirement (e.g., the Kansas City Ozone SIP), these contingencies should be discussed in detail. Reasonable Progress milestones in the Regional Haze SIP will likely be dependent on technologies that are actually deployed.

Second, use of "presumptive" emission limits in the Regional Haze Agreements does not bind the companies to deliver BART technology determined by a full statutory five-factor BART analysis. If the cost of control options that achieve adequate and responsible visibility improvement remains reasonable after presumptive BART is achieved, adequate and responsible visibility improvement should remain an active consideration before the BART analysis is concluded.

Response 1:

KDHE carefully considered the presumptive limits provided in the BART guidance. Specifically, the guidance states that we must require an EGU facility greater than 200 MW located at greater than 750 MW to meet specific emissions limits depending on boiler types and current controls. KDHE followed this guidance and required these presumptive limits where applicable. From our interpretation of this guidance, we provided guidance to our sources that stated, “If your facility falls in the EGU category described above and you propose controls at or beyond these presumptive levels, you need not take into account the remaining statutory factors, as BART will be met.” EPA’s BART guidance clearly states an emissions limit is required and not a specific technology. Therefore, we will not be revisiting the BART analysis for the individual sources.

Additionally, the Agreement reached with Westar included several additional measures that went beyond BART including fuel switching at Gordon Evans Unit 1, Hutchinson Unit 4, Murray Gill Units 1, 2, 3, and 4; rebuild of scrubber, low-NO_x burners, and combustion controls at Jeffrey Unit 3; and limits for SO₂ at Lawrence Units 3, 4, and 5, and Tecumseh Units 9 and 10. These additional measures will achieve reductions that go above and beyond those that would be achieved with the identification of a specific BART technology for Jeffrey Units 1 and 2, and Gordon Evans Unit 2. This is a holistic approach that ultimately achieves more reasonable further progress.

Comment 2:

Westar Energy, Jeffrey Energy Center Units 1 and 2 (720 MW Coal, 720 MW Coal)

Westar’s BART determination commits to specific control technology that will meet the “presumptive” requirements of the BART guidelines; namely, low NO_x burner systems to control NO_x, rebuild of existing wet scrubbers to control SO₂ and an upgrade of the electrostatic precipitator to control PM₁₀. The KDHE “Regional Haze Agreement” with Westar references the presumptive limits established by 40 CFR 51 Appendix Y, but does not commit the company to follow through on deployment of the committed technologies. The Regional Haze Agreement references its own Appendix A, including specific “Proposed Controls”, but the Agreement still references only presumptive limits.

Westar assumed that the rebuild of the existing wet scrubbers for SO₂ control would generate a control efficiency of almost 83%, leading to a 0.15 lb/MMBtu emission rate, even though wet scrubbers have been shown to be up to 95% efficient. More definitive, authoritative information on control efficiency should be documented in the BART demonstration to show why higher control efficiencies cannot be realized. Demonstration of a higher efficiency could allow KDHE to use a lower emission limit to attain further reasonable progress in the Regional Haze SIP.

It would be desirable to have Westar’s BART determination include detailed cost information for the chosen control technologies, but it may not be necessary if the controls are the best available technologies as claimed. However, low NO_x burners alone are likely not the best available technology, so a cost analysis for the company’s NO_x BART determination is warranted.

Response 2:

Jeffrey Energy Center is a source that meets the criteria for presumptive control requirements. The limits established in the Westar BART agreement are those specified as presumptive for the unit type at Jeffrey. Again, KDHE's interpretation of the presumptive requirements guidance requires a specific emissions limit and not a specific control technology be identified. Westar has agreed to the presumptive limit for this source.

Westar provided NO_x control cost information in their BART Analysis submittal in Table 5-4 (see Appendix 9.7). KDHE determined that the BART submittal is complete and the signed agreement meets the requirements of the regional haze SIP requirements.

Comment 3:

Westar Energy Gordon Evans Energy Center Unit 2 (383 MW #6 Fuel Oil)

The initial choice of low NO_x burners (LNB) and 1% fuel oil as BART for NO_x control was abandoned when the fuel switching alternative of natural gas was selected. A cost analysis should be presented to show why LNB should not continue to be deployed along with the natural gas alternative.

Response 3:

KDHE evaluated Westar's initial proposal of low NO_x burners and 1% sulfur fuel oil and agreed this proposal met the requirements for BART for this unit. Because Westar then agreed to an alternative to BART and demonstrated that the alternative achieved greater visibility improvements than the initial BART determination, no additional cost analysis was required by KDHE. The current fuel switching requirement is better than BART, thus no further cost analysis will be required. Should the Wichita Mountains (or other surrounding Class I areas) not show reasonable progress in the next SIP period, KDHE will re-visit this source and evaluate it further as a reasonable progress demonstration. This evaluation would include the costs of low NO_x burners and the visibility benefits such controls would achieve.

Comment 4:

Kansas City Power & Light, La Cygne Generating Station Units 1 and 2 (840 MW Cyclone Coal, 710 MW Opposed-Fired Coal)

The BART determination does not select a specific technology for BART. It reserves for a later date selection of wet scrubbers or spray dryer absorbers (SDA) for SO₂ control; and SCR or combustion controls (to possibly accommodate the Kansas City Ozone SIP) for NO_x control. The KDHE Regional Haze Agreement with KCP&L references for SO₂ a 0.10 lb/MMBtu weighted average emission limit for Units 1 and 2 and for NO_x a 0.13 lb/MMBtu weighted average emission limit for Units 1 and 2. The FWS would prefer that specific controls be documented as BART as discussed above, but KDHE's use of better-than-presumptive emission limits is to be commended.

Response 4:

The emissions limits established for these two units represent what can be achieved with BART controls. The source requested the additional flexibility in choosing how they meet these limits at the time the agreement was signed due to the uncertainties associated with the costs of various control technologies and the engineering analysis needed to employ them. This request is reasonable and the emissions limits that result are what are important for visibility improvements.

Comment 5:

Kansas City Board of Public Utilities (BPU), Nearman Unit 1 (256 MW Coal)

As mentioned above, the BPU BART determination for the Unit 1 (Appendix 9.5) could not be located in the Kansas Regional Haze SIP submittal. The FWS would like the opportunity to review this document. Even though Unit 1 is not subject to presumptive BART control levels due to its 256 MW size, the KDHE Regional Haze Agreement with BPU sets emission limitations for SO₂ at 0.09 lb/MMBtu and for NO_x at 0.23 lb/MMBtu. This is an excellent commitment, but a specific technology commitment is still appropriate. The 0.09 lb/MMBtu limit in the KDHE Regional Haze Agreement is based on the achievability of a semi-dry flue gas desulfurization technology, but Table 9.4 of the SIP allows a 0.15 lb/MMBtu SO₂ limit just because it is the “presumptive” level. These two numbers should be made consistent and both should be shown as 0.09 lb/MMBtu.

Response 5:

Negotiations with BPU remain ongoing and will be incorporated into the SIP once a Consent Agreement is reached or when a Regional Haze Regulation is adopted by Kansas to regulate BART sources.

United States Department of Agriculture

The State of Kansas received a letter from the United States Department of Agriculture (USDA) on April 4, 2008. The letter stated that the federal land managers representing USDA were satisfied with the Kansas Regional Haze SIP document as provided and offered no suggestions for change.

Comments and Responses from Second Comment Period (7/16/2009 – 8/27/2009)

In response to comments received and changes made to the KS RHSIP after the first public hearing, KDHE held a second comment period. The State of Kansas provided a revised draft of the KS RHSIP to federal land managers representing the US Park Service, US Fish and Wildlife Service, and the US Forest Service on July 16, 2009. In addition, revised draft copies were sent for comments to EPA Region 7, the Iowa Tribe, the Kickapoo Tribe, the Prairie Band Potawatomi Nation, and the Sac and Fox Nation. Comments were received from the US Fish and Wildlife Service and EPA Region 7. No comments were received from the tribes.

United States Department of the Interior, Fish and Wildlife Service

Comments were received from the Fish and Wildlife Service of the US Department of the Interior on August 27, 2009. A summary of the comments and KDHE's responses are below. A copy of the letter can be found in Appendix 4.2.

Westar Energy, Jeffrey Energy Center Units 1 and 2

Comment 1:

Westar's BART determination commits to specific control technology that will meet the "presumptive" BART limits outlined in the EPA Guidelines for Best Available Retrofit Technology Determinations; namely, low NO_x burner systems to control NO_x, rebuild of existing wet scrubbers to control SO₂ and an upgrade of the electrostatic precipitator to control PM₁₀.

The KDHE note in Section 9.3 of the July 2, 2009, Regional Haze Plan Revision states: "If your facility falls in the EGU category described above and you propose control at or beyond these presumptive levels, you need not take into account the remaining statutory factors, as BART will be met." This is not correct. If the cost of control options that achieve adequate and responsible visibility improvement remains reasonable after presumptive BART is achieved, adequate and responsible visibility improvement should remain an active consideration before the BART analysis is concluded. The Federal Land Managers (FLMs) believe that cost effective control options that result in emission control greater than presumptive BART should be given equal consideration to lower-cost options that achieve presumptive BART.

Response 1:

KDHE believes that cost-effective control options that result in emission control greater than presumptive BART should not receive equal consideration to lower-cost options that achieve presumptive BART. The guidance in Section 9.3 of the SIP is based on an examination of how EPA set these presumptive limits coupled with the EGUs in the state to which this guidance would apply. One of the major driving factors that shaped this guidance was the consideration of the State's authority to implement the regional haze rule. In 2006, the Kansas Legislature amended the State of Kansas Air Quality Statutes to include a new clause at K.S.A. 65-3005, which authorizes the Secretary to "prepare and adopt a regional haze plan as may be necessary to prevent, abate and control air pollution originating in Kansas that affects air quality in Kansas or

in other states or both. Any regional haze plan prepared by the secretary shall be no more stringent than is required by 42 U.S.C. 7491.” No modifications to the SIP were made as a result of this comment.

Comment 2:

Westar’s NO_x BART determination contrasted only the cost-effectiveness of low NO_x burners (LNB) and Selective Catalytic Reduction (SCR), with SCR being shown as not cost-effective. SCR is capable of a much higher control efficiency than the assumed 0.10 lb/MMBtu when compared to other proposals reviewed by the FLMs (in some cases 0.07 lb/MMBtu). The State has not challenged the company’s conclusion that SCR (alone) is not cost-effective, because the cost per deciview metric would likely remain too expensive. However, other combinations of technically feasible NO_x controls should have been considered. Over-fire air (OFA) is often considered along with LNB to be more cost-effective (cost per ton) than LNB alone. SCR combined with LNB and OFA is considered by most sources, rather than SCR alone, since the combination is a far more cost-effective NO_x control option.

Response 2:

KDHE believes Westar has performed the BART determination as EPA recommended in the comment. In Tables 5-4 and 5-5 of Westar’s BART determination (Appendix 9.7 to the SIP), it is our understanding that the “LNB System” includes LNB with separated OFA (although not labeled as such for Unit 1). KDHE understands that this is the system (LNB + OFA) that Westar has already installed on Unit 1 and will be installing on Unit 2 with a neural network installation planned for the near future. The SCR costs were estimated and the system sized assuming the LNB system was a prerequisite control before the SCR; thus the cost and size were part of this assumption. The incremental cost is then based on the additional emissions reductions over the LNB system coupled with the additional costs of the SCR. KDHE believes the Westar analysis is representative of the costs and technology for these units. No modifications to the SIP were made as a result of this comment.

Comment 3:

Westar assumed that the rebuild of the existing wet scrubbers for SO₂ control would generate a control efficiency of almost 83%, thereby meeting the 0.15 lb/MMBtu presumptive SO₂ emission rate, even though wet scrubbers have been shown to achieve control efficiencies up to 95%. An emission limit of 0.09 lb/MMBtu can commonly be met in such permit limitations. More definitive, authoritative information on control efficiency should be documented in the BART demonstration to show what higher control efficiencies could be realized for the Jeffrey Energy Center units. Demonstration of a higher efficiency (e.g., 0.09 lb/MMBtu) would allow KDHE to insert a more realistic emission limit into Appendix A of the Westar Regional Haze Agreement, so as to more accurately represent the capability of the installed technology, rather than merely using the presumptive emission limit of 0.15 lb/MMBtu.

In the KDHE’s response to our original comments regarding its SIP (found in Appendix 4.1 to the July 2, 2009, proposed SIP package), the State explains that its agreement with Westar went

beyond the company's BART-eligible units, to include additional measures at several other Westar facilities. The KDHE states: "These additional measures will achieve reductions that go above and beyond those that would be achieved with the identification of a specific BART technology for Jeffrey Units 1 and 2, and Gordon Evans Unit 2. This is a holistic approach that ultimately achieves more reasonable further progress." While we recognize the State's position, in order to satisfy the BART demonstration, this alternative to BART should be analyzed to show that greater benefit to visibility will result.

Response 3:

The 95% control efficiency quoted above is a typical efficiency for new wet scrubbers. The wet scrubbers in use at Jeffrey Energy Center were originally installed more than 30 years ago. Two of the three wet scrubbers have been rebuilt, with the third wet scrubber currently being rebuilt. It was determined to be more cost effective to rebuild the scrubbers and still achieve significant emissions reductions than to install entirely new scrubbers. Therefore, KDHE believes the control efficiency of nearly 83% quoted by Westar Energy is realistic given the age of the scrubbers. No modifications to the SIP were made as a result of this comment.

Comment 4:

On page 8-2 of the Westar BART Five Factor Analysis, it was determined that Electrostatic Precipitator (ESP) upgrades were considered to be BART for particulate matter control. However, in Section 9.3 KDHE stated, "In all cases here, added PM_{2.5} controls would help visibility only marginally, and would not be cost effective." This statement was made without any cost analysis being done by KDHE. Unless cost data is presented by KDHE, ESP upgrades proposed by the company should be accepted by KDHE and should be included in Appendix A of the Westar Regional Haze Agreement.

Response 4:

ESP rebuilds for Jeffrey Energy Center are included in Appendix A of the Westar Regional Haze Agreement (see Appendix 9.7 of the SIP). Westar will be required to perform these ESP rebuilds; however, no additional PM limits have been established. KDHE evaluated PM impacts from Jeffrey Energy Center by examining the visibility modeling. From the modeling it was determined additional PM controls would help visibility only marginally due to their low overall visibility impact (generally less than 1% of the overall facility impact) with current control equipment. Because PM only represented a small fraction of the total modeled visibility impact, and Westar had agreed to rebuild the ESP's, an additional detailed cost analysis was not required. No modifications to the SIP were made as a result of this comment.

Westar Energy, Gordon Evans Energy Center Unit 2

Comment 5:

Our December 14, 2007, comment regarding further analysis of potential NO_x control alternatives for this facility as it is converted to natural gas is still pertinent. KDHE responded

to that comment saying that, since the fuel switching alternative achieves greater visibility improvements than would have resulted from employing controls it had agreed would be BART for the unit when fired on fuel oil, “no further cost analysis will be required.” The KDHE continues, stating: “Should the Wichita Mountains (or other surrounding Class I areas) not show reasonable progress in the next SIP period, KDHE will re-visit this source and evaluate it further as a reasonable progress demonstration. This evaluation would include the costs of low NO_x burners and the visibility benefits such controls would achieve.”

We believe that it is prudent to address this analysis now at the time of implementing the fuel switching requirement, as the marginal cost of employing low NO_x burners instead of new traditional natural gas burners should be significantly less than changing out the new natural gas burners at some future time. The documentation indicates that, after the fuel switch to natural gas is accomplished, there will still be 2,136 lb/hr NO_x emissions for this unit. The low NO_x burner alternative should be required to go through an additional cost-effectiveness analysis to determine if the remaining (2,136 lb/hr) NO_x could be cost-effectively reduced.

Response 5:

KDHE does not believe it to be prudent at this time to address potential NO_x emission controls at Gordon Evans Energy Center. As part of the five-year SIP review, the need for NO_x emission controls will be re-evaluated. The NO_x emission rate of 2,136 lb/hr has proven to be a high estimate based on operating data since the fuel switch. During the period from 2006 through 2008, the maximum 24-hour NO_x emission rate with a full 24 hours of operation was 1,909 lb/hr. No modifications to the SIP were made as a result of this comment.

Kansas City Power & Light, La Cygne Generating Station Units 1 and 2

Comment 6:

Our December 14, 2007, comments discussed that the BART determination for KCPL’s La Cygne Units 1 and 2 did not select a specific technology for SO₂ BART, but rather referenced a 0.10 lb/MMBtu weighted average SO₂ emission limit for the two units, and reserved for a later date selection of the particular control technology for SO₂ control (either wet scrubbers or spray dryer absorbers (SDA)). The KDHE’s response stated that: “The emissions limits established for these two units represent what can be achieved with BART controls. The source requested the additional flexibility in choosing how they meet these limits at the time the agreement was signed due to the uncertainties associated with the costs of various control technologies and the engineering analysis needed to employ them. This request is reasonable and the emissions limits that result are what are important for visibility improvements.”

We do agree that ultimately, the BART requirement is the resulting emissions limit. However, the limit that has been identified for these units is not the most stringent possible with the range of retrofit technologies available. Wet scrubbers are capable of achieving 0.09 lb/MMBtu, which represents 10% less SO₂ emissions compared to the level that the KDHE is requiring of this facility. We also point out that other facilities across the country have completed their necessary engineering cost analyses and committed to specific control technologies and BART

limits; plus, nearly two years have elapsed since the initial BART decisions were presented with KCPL's request for flexibility. Thus, we stand by our original comment that, to satisfy the required BART demonstration, a detailed cost analysis should be performed on each control alternative to determine the most cost-effective control, together with the actual control efficiency for the most cost-effective alternative. That said, we do commend KDHE's use of better-than-presumptive emission limits for these units.

Response 6:

KDHE acknowledges the better-than-presumptive BART emission limits for KCP&L. KDHE also acknowledges the emission rates are not necessarily the most stringent possible. During the consultation process with surrounding states, KDHE received no requests from states with Class I areas to further reduce emissions beyond those that would be achieved with the rates contained in the Agreement with KCP&L. Additionally, KDHE's authority concerning a regional haze plan is limited by a new state statute. The Kansas Legislature amended the State of Kansas Air Quality Statutes in 2006 to include a new clause at K.S.A. 65-3005, which authorizes the Secretary of KDHE to "prepare and adopt a regional haze plan as may be necessary to prevent, abate and control air pollution originating in Kansas that affects air quality in Kansas or in other states or both. Any regional haze plan prepared by the secretary shall be no more stringent than is required by 42 U.S.C. 7491." In summary, KDHE does not intend to perform a detailed cost analysis on control alternatives at this time. No changes were made to the SIP as a result of this comment.